WM-EX1/EX1HG

SERVICE MANUAL

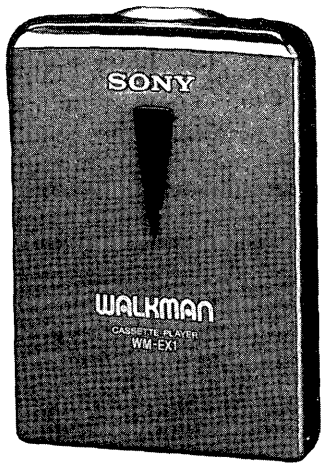

Photo : WM-EX1

US Model
WM-EX1
AEP Model
UK Model
WM-EX1HG
Canadian Model
E Model
Tourist Model
WM-EX1/EX1HG

Model Name Using Similer Mechanism	NEW
Tape Transport Mechanism Type	MT-WMEX1-112

SPECIFICATIONS

Tape section

Frequency response
(Dolby NR* off)
Playback: 30–18,000 Hz
Output
Headphones (REMOTE⌒ jack)
Load impedance 8–300 ohms
Power output
5 mW + 5 mW (16 ohms)
* Dolby noise reduction manufactured under license from Dolby Laboratories Licensing Corporation. "DOLBY" and the double-D symbol ⧈ are trademarks of Dolby Laboratories Licensing Corporation.

General

Power requirements
1.5 V
Rechargeable battery
One R6 (size AA) battery
Dimensions (w/h/d)
Approx. 79.7 x 111.8 x 21.1 mm, incl. projecting parts and controls
Mass
EX1: Approx. 160 g
EX1HG: Approx. 165 g
Incl. rechargeable battery, headphones with remote control and cassette:
EX1: Approx. 220 g
EX1HG: Approx. 225 g
Supplied accessories
Battery case (1)
Stereo headphones with remote control (1)
Ear adaptors (2)
Battery charger (1)
Rechargeable battery (NH-9WM (S), 1.2 V, 1,000 mAh, Ni-MH) (1)
Carrying pouch (1)
Cleaning cloth (1) (EX1HG only): Supplied in the carrying pouch.

Design and specifications subject to change without notice.

When to charge the battery

Charge the battery when the BATT lamp goes off and "⌧" in the display of remote control flashes. You can charge the battery about 300 times.

Battery life	(Approx. hours)
Rechargeable battery (NH-9WM (S))	
Tape playback	12
	36 (with Sony alkaline AM3 (N))

If using the NC-6WM rechargeable battery

Charge it in the same procedure as that of the NH-9WM (S) rechargeable battery indicated before. For full-charging, it takes 30 minutes.

Battery life	(Approx. hours)
Rechargeable battery (NC-6WM)	
Tape playback	8

Notes
- Do not tear off the film on the rechargeable battery.
- Use the Sony NH-9WM (S) or NC-6WM rechargeable battery only with the supplied battery charger.
- Do not leave the charger plugged in for more than 20 hours. Overcharging may damage the rechargeable battery.
- The battery charger and the rechargeable battery may become warm during charging, but it is not a problem.

House Current

Remove the rechargeable battery if inserted and attach the battery case and connect the AC power adaptor (AC-E15HG not supplied) to the DC IN 1.5 V of the battery case and to the wall outlet. Do not use any other AC power adaptor.

Polarity of the plug

使用時は添付資料も参照のこと
Refer to the additional documents.

CASSETTE PLAYER

SONY®

Notes on chip component replacement

- Never reuse a disconnected chip component.
- Notice that the minus side of a tantalum capacitor may be damaged by heat.

Flexible Circuit Board Repairing

- Keep the temperature of the soldering iron around 270 °C during repairing.
- Do not touch the soldering iron on the same conductor of the circuit board (within 3 times).
- Be careful not to apply force on the conductor when soldering or unsoldering.

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SAFETY-RELATED COMPONENT WARNING !!

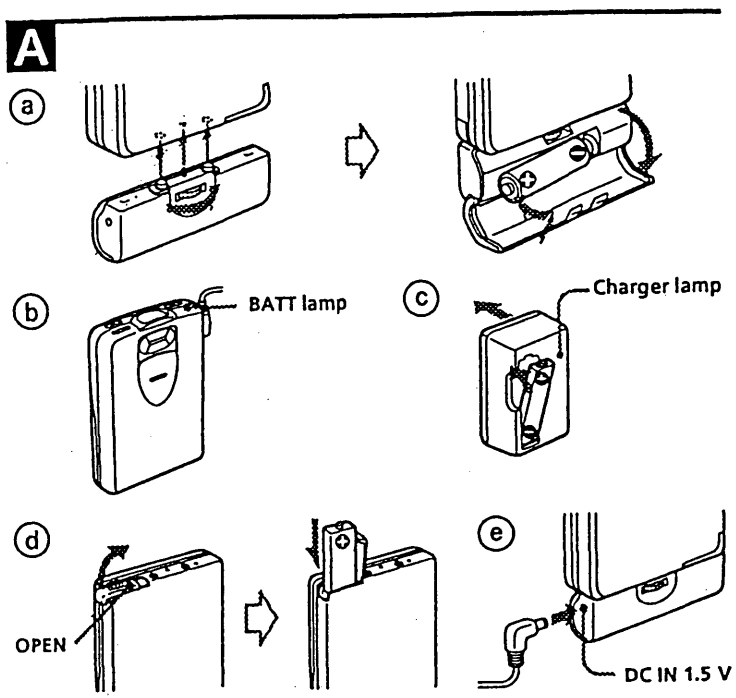
COMPONENTS IDENTIFIED BY MARK ⚠ OR DOTTED LINE WITH MARK ⚠ ON THE SCHEMATIC DIAGRAMS AND IN THE PARTS LIST ARE CRITICAL TO SAFE OPERATION. REPLACE THESE COMPONENTS WITH SONY PARTS WHOSE PART NUMBERS APPEAR AS SHOWN IN THIS MANUAL OR IN SUPPLEMENTS PUBLISHED BY SONY.

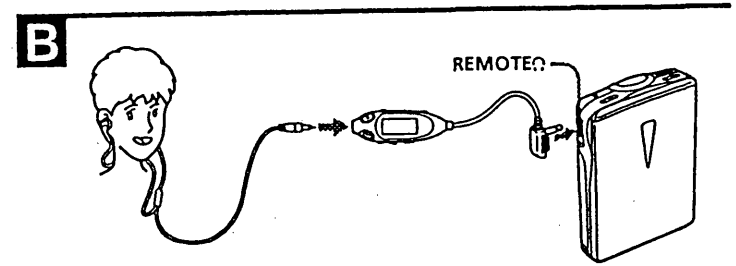
ATTENTION AU COMPOSANT AYANT RAPPORT À LA SÉCURITÉ!!

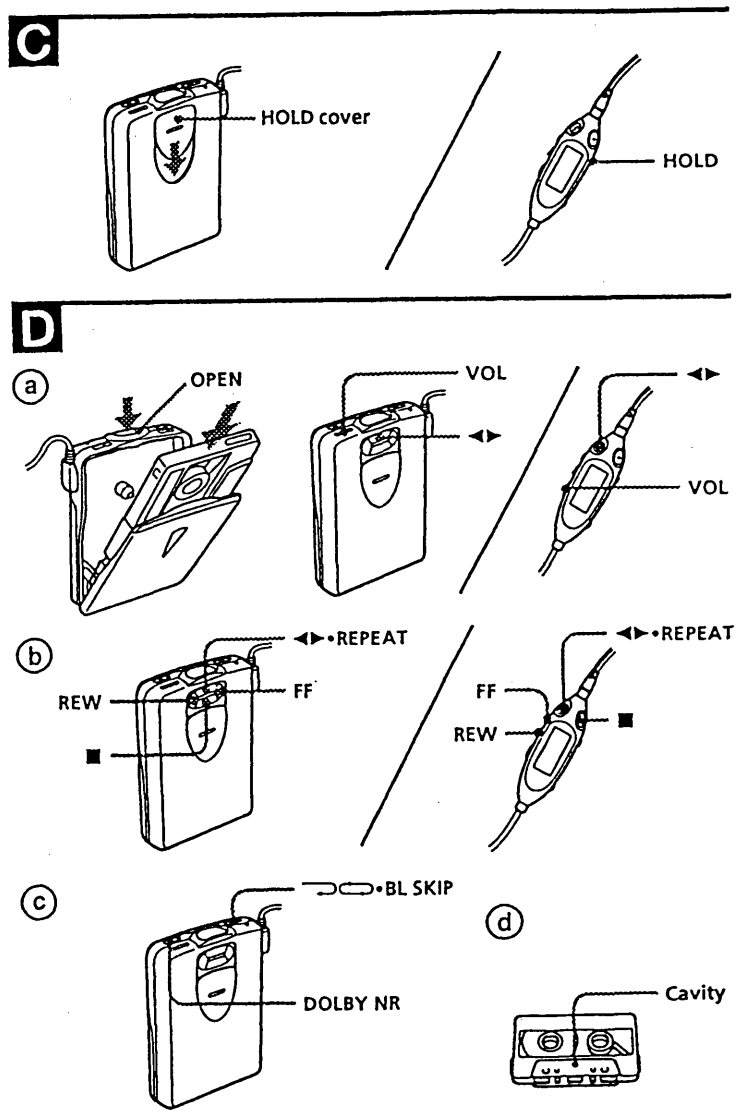
LES COMPOSANTS IDENTIFIÉS PAR UNE MARQUE ⚠ SUR LES DIAGRAMMES SCHÉMATIQUES ET LA LISTE DES PIÈCES SONT CRITIQUES POUR LA SÉCURITÉ DE FONCTIONNEMENT. NE REMPLACER CES COMPOSANTS QUE PAR DES PIÈCES SONY DONT LES NUMÉROS SONT DONNÉS DANS CE MANUEL OU DANS LES SUPPLÉMENTS PUBLIÉS PAR SONY.

SECTION 1
GENERAL

This section is extracted from instruction manual.







SECTION 2
SERVICE NOTE

[Service Mode]

Mode which enables the mechanism to be operated with the MAIN board opened.

1. Setting

1) Refer to "Disassembly" and remove the cabinet and open the MAIN board.
2) Connect the MAIN board to the motor and plunger using a jumper wire. Use ''Extension tool (1-769-143-11)) (one set 10 tools)" to make connection simple.
3) Short-circuit the service mode land (TP701) by soldering.
4) Remove R726 on the MAIN board.
5) Short-circuit S704 with the jumper wire.
6) Turn OFF the BL SKIP switch (S702) of the SW flexible board (MODE).
7) Supply 1.2V to the battery terminals (+) and (–) using a stabilized power supply.

2. Preset State

This state must be set to set the PLAY, FF, and REW modes.

1) Check that the lever (NR SW) is at the center and N/R switch (S701) is at the center. If not, set the preset state as follows.
2) Move the N/R switch (S701) according to the side faced by the lever (NR SW).
3) Turn OFF the stabilized power supply switch once and then turn it ON again so that the lever (NR SW) can be moved. Move the N/R switch (S701) according to this timing and set to the center.

3. FF REW Mode

1) Check the "2. Preset State" and press the FF switch and REW switch.

4. PLAY Mode

1) Check the "2. Preset State".
2) Press the ◁▷ switch. The lever (NR SW) will move to the N side once and then to the R side. Move the N/R switch (S701) according to this timing to set the PLAY (R side) mode. Press the ◁▷ switch another time and move the N/R switch (S701) according to the movement of the lever (NR SW) to set the PLAY (N side) mode.

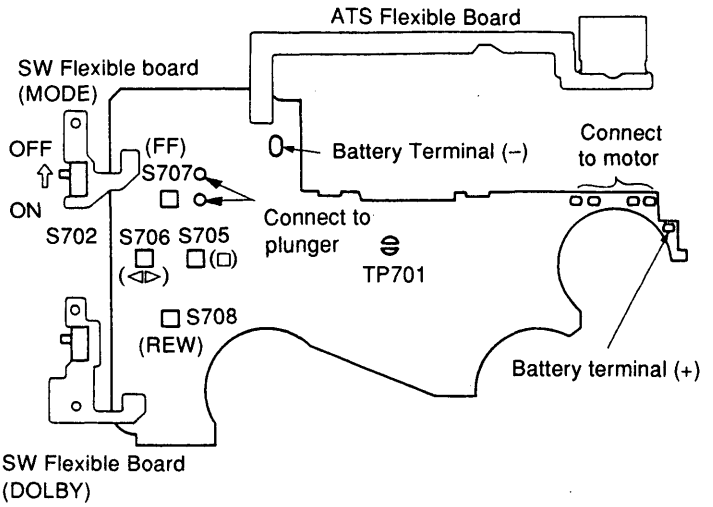
Note 1 : If the above cannot be performed, start again from preset.

Note 2 : Use the remote control ◁▷, □, FF, and REW switches as much as possible. If the remote control is not available, do not touch S705 to S708 with the hand and use something with a round tip to press them.

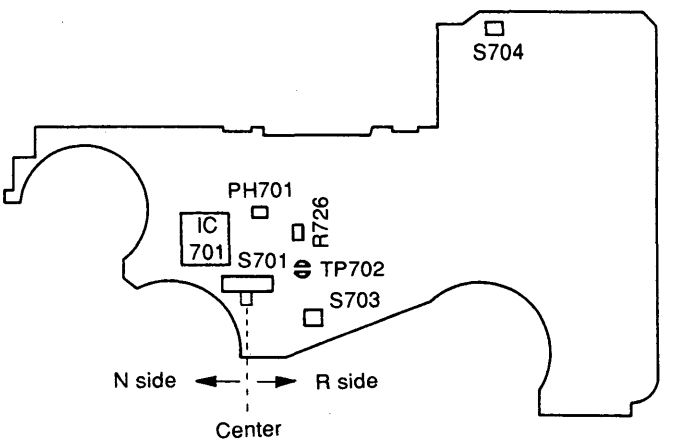
Note 3 : By using a headphone, the timing for moving S701 can be known by the beep.

[MAIN Board]

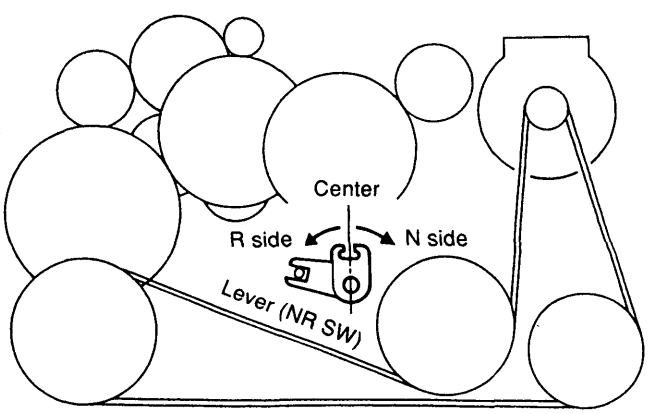
— Conductor Side —



— Component Side —

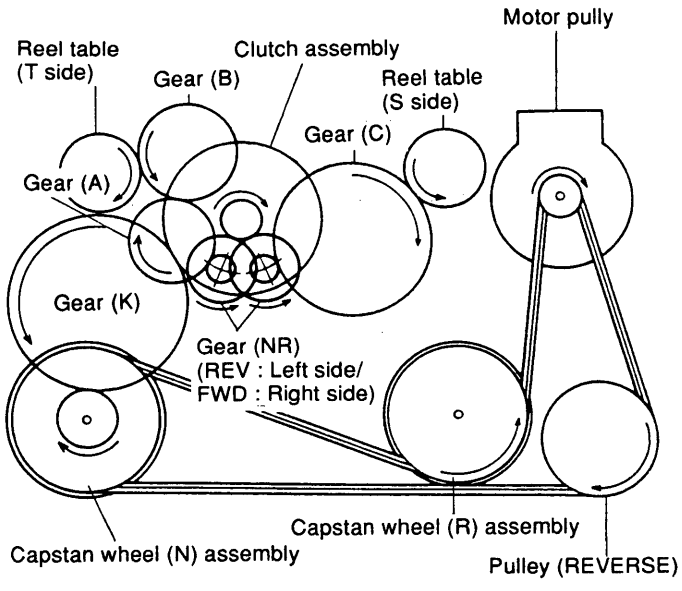


[Lever (NR SW)]

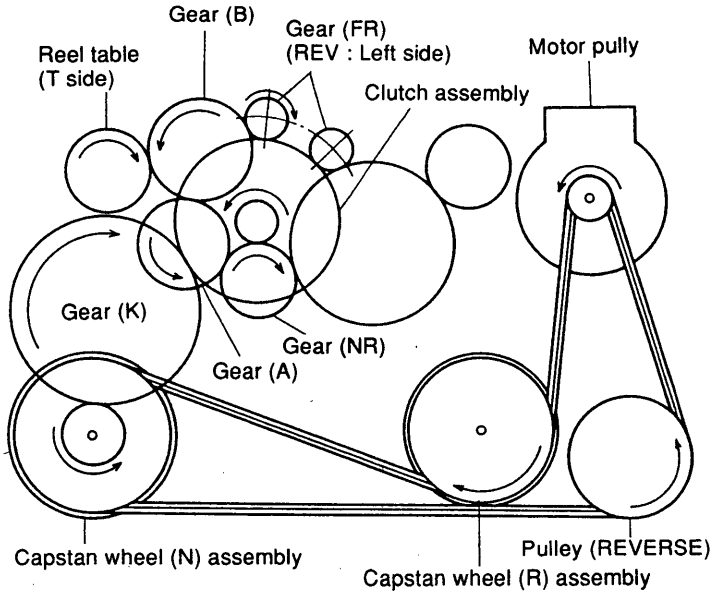


[Rotation system]

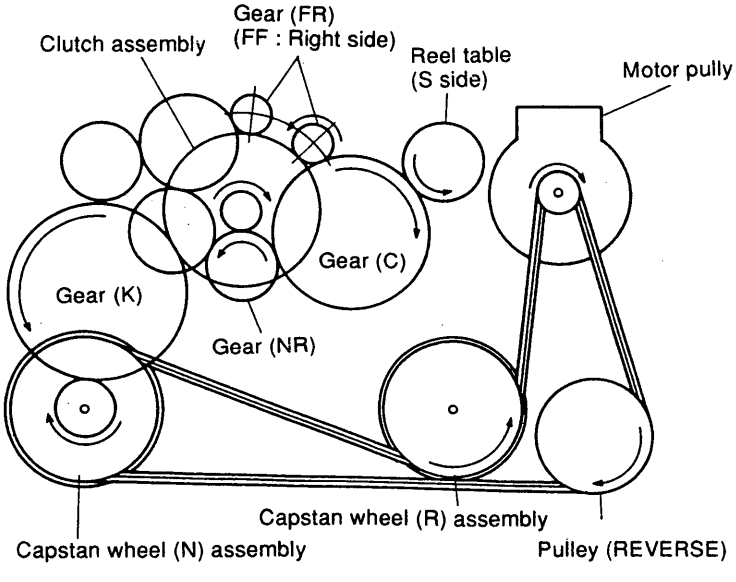
Rotation system during PLAY.



Rotation system during REW.



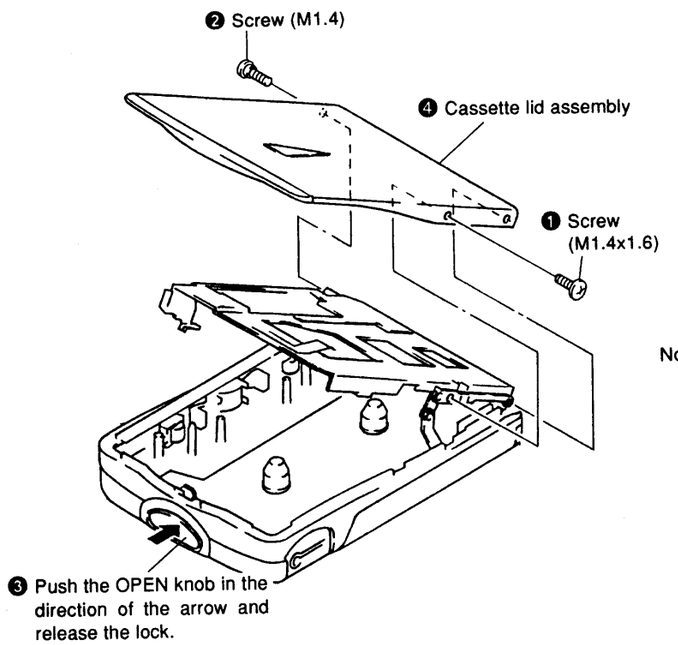
Rotation system during FF.



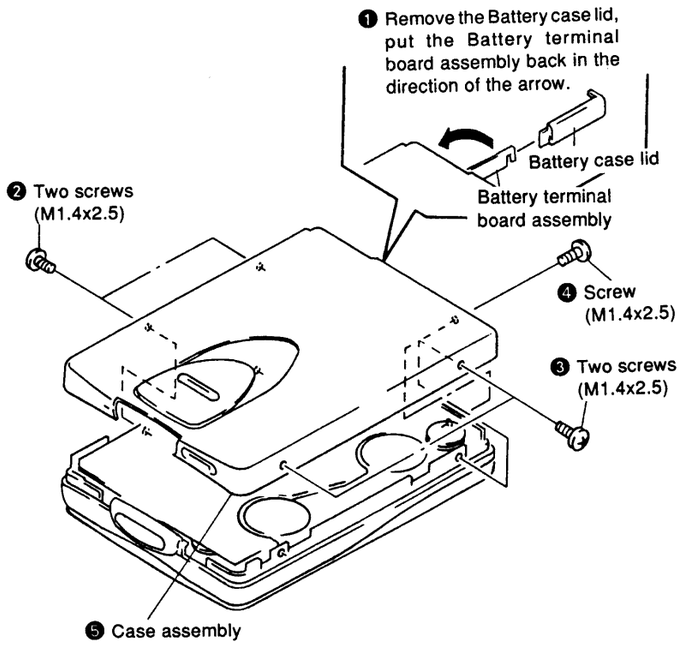
SECTION 3
DISASSEMBLY

3-1. CASSETTE LID ASSEMBLY

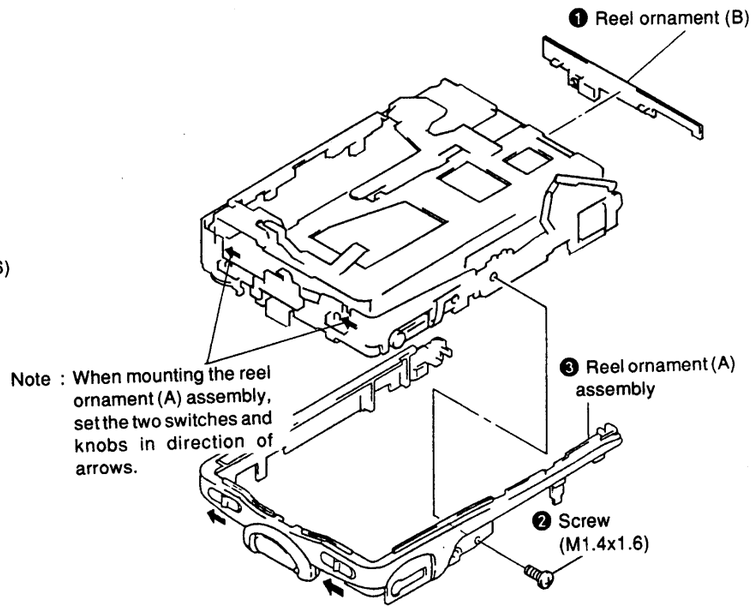
- Remove by priority of number as ❶ in the figure.



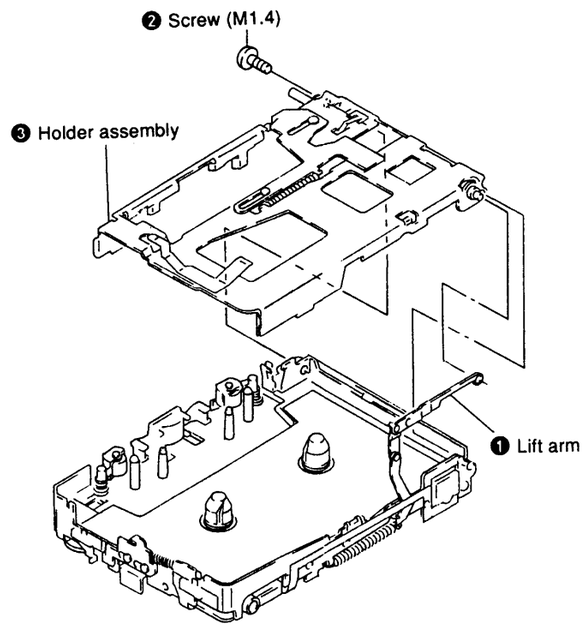
3-2. CASE ASSEMBLY


❶ Remove the Battery case lid, put the Battery terminal board assembly back in the direction of the arrow.
Battery case lid
Battery terminal board assembly
❷ Two screws (M1.4x2.5)
❹ Screw (M1.4x2.5)
❸ Two screws (M1.4x2.5)
❺ Case assembly

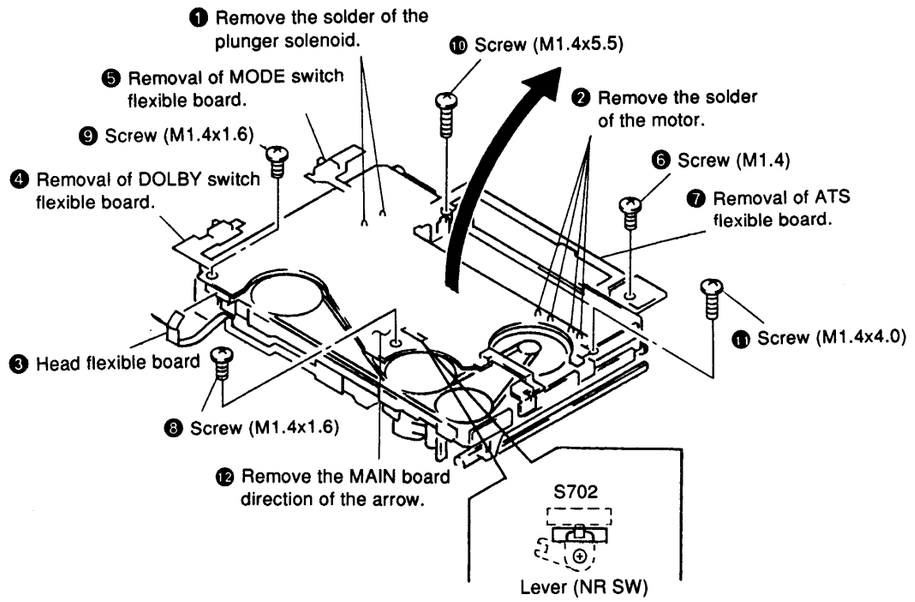
3-3. REEL ORNAMENT


❶ Reel ornament (B)
Note : When mounting the reel ornament (A) assembly, set the two switches and knobs in direction of arrows.
❸ Reel ornament (A) assembly
❷ Screw (M1.4x1.6)

3-4. HOLDER ASSEMBLY

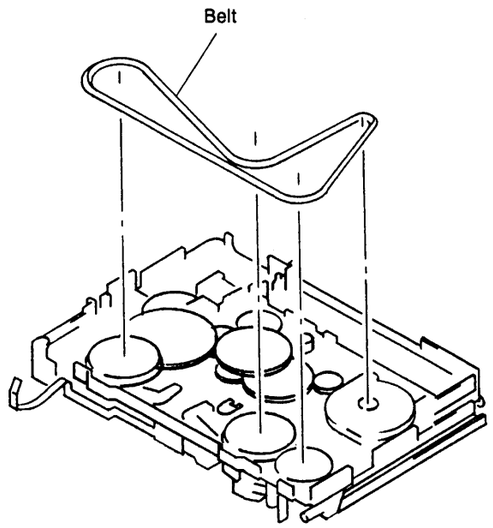


3-5. MAIN BOARD


❶ Remove the solder of the plunger solenoid.
❿ Screw (M1.4x5.5)
❺ Removal of MODE switch flexible board.
❷ Remove the solder of the motor.
❾ Screw (M1.4x1.6)
❻ Screw (M1.4)
❹ Removal of DOLBY switch flexible board.
❼ Removal of ATS flexible board.
⓫ Screw (M1.4x4.0)
❸ Head flexible board
❽ Screw (M1.4x1.6)
⓬ Remove the MAIN board direction of the arrow.
S702
Lever (NR SW)

Note : Confirm if the switch lever installs itself in the groove of a lever (NR SW) for assembling.

3-6. BELT



SECTION 4
MECHANICAL ADJUSTMENTS

PRECAUTION

1. Before adjusting, clean the following parts with a piece of cotton moistened with alcohol.
   playback head pinch roller
   rubber belt capstan
2. Demagnetize the playback head using a head demagnetizer.
3. Do not use a magnetized screwdriver for adjustments.
4. After adjusting, apply screw-locking compound onto the adjusted parts.
5. Unless specified otherwise, use a specified voltage (1.3V) to perform the adjustments.

[Torque Measurement]

Mode	Torque Meter	Meter Reading
FWD	CQ-102C	18 — 28 g • cm
FWD Back tension		0.5 — 3.0 g • cm
REV	CQ-201RC	18 — 28 g • cm
REV Back tension		0.5 — 3 g • cm
FF	CQ-201B	More than 40 g • cm
REW		

SECTION 5
ELECTRICAL ADJUSTMENTS

PRECAUTION

1. Specified voltage : 1.3V.
2. Switch position
   DOLBY NR switch : OFF
   EX DBB switch : NORM (Only remote control)

Cassette Section

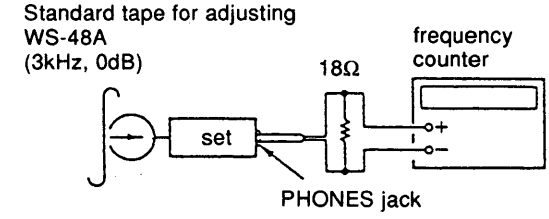
Standard tape

Product name	Recorded contents	Purpose
WS-48A	3 kHz, 0 dB	For adjusting speed

0dB = 0.775V

[Tape speed adjustment]

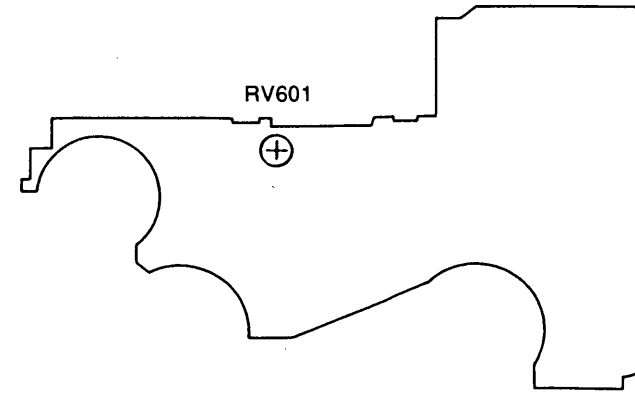
Procedure :



1. Playback WS-48A (tape center part) in the FWD state and adjust RV601 so that the frequency counter reading becomes 3000 ± 10 Hz.
2. Playback WS-48A (tape center) in the REV state.
   Check that the frequency counter reading is within 2.5% of the reading of step 1.

Adjustment Point :

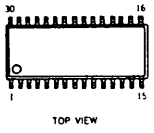
MAIN BOARD — Component Side —



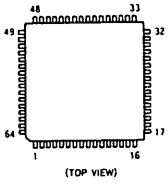
SECTION 6
DIAGRAMS

6-1. SEMICONDUCTOR LEAD LAYOUTS

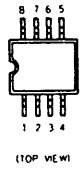
LB1679V



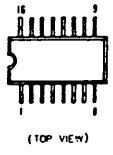
MB89131PFV-G
TA2072F



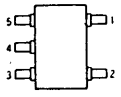
MM1210-XFF



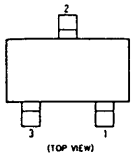
MPC1850VM



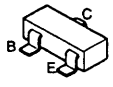
PST9010NL
S-81211SG-QA
S-81218SG-QR



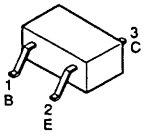
XC61AN1402MX



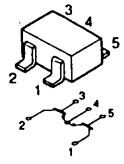
DTC144TU
UN5215
2SB1218A-QRS
2SB1295-UL6
2SD1935



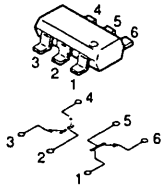
UN5110-QRS



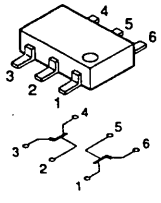
XN1215
XP1215



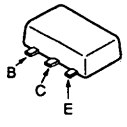
XN4215



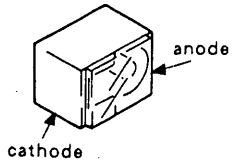
XN4404



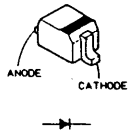
2SB1302-S



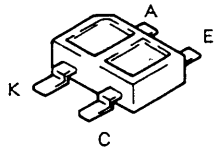
CL-200HR-C



MA110



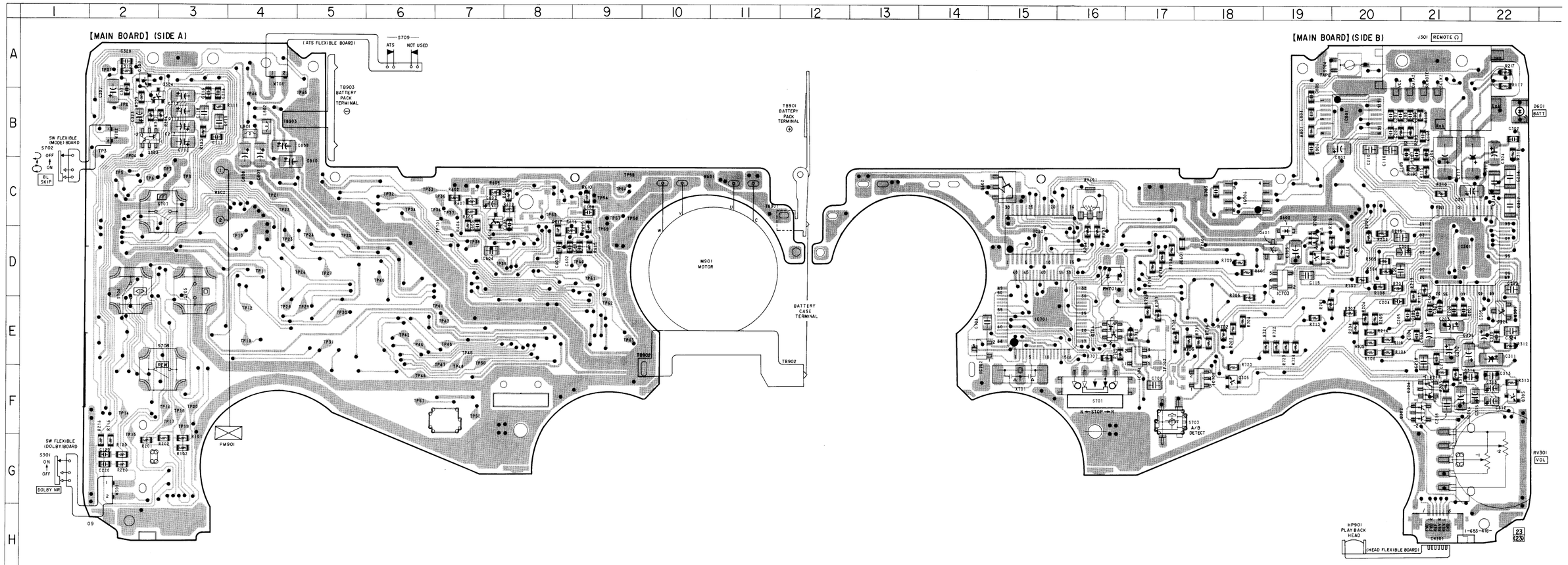
NJL5183K-F20



• **Semiconducctor Location**

Ref. No.	Location
D601	B-22
D602	D-19
IC301	D-21
IC601	C-15
IC701	E-15
IC702	E-14
IC703	D-19
IC704	E-17
IC705	F-18
IC706	C-18
IC801	B-20
PH701	D-16
Q301	E-22
Q302	F-21
Q303	B-2
Q304	B-3
Q305	F-18
Q306	F-21
Q307	A-2
Q601	D-19
Q602	C-15
Q604	C-7
Q701	D-19
Q702	D-19
Q705	F-22
Q706	E-16

6-2. PRINTED WIRING BOARDS



Note:

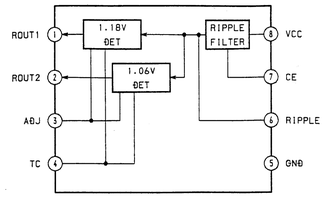
- ● : Through hole.
- △ : internal component.
- ▒ : Pattern from the side which enable seeing. (The other layer's patterns are not indicated.)

6-3. SCHEMATIC DIAMOND

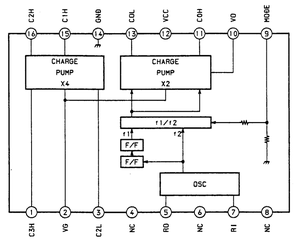
• See page 20 for IC Pin Functions. (IC601,701)

• IC Block Diagrams

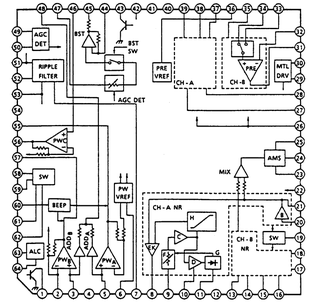
IC706 MM1210-XFF

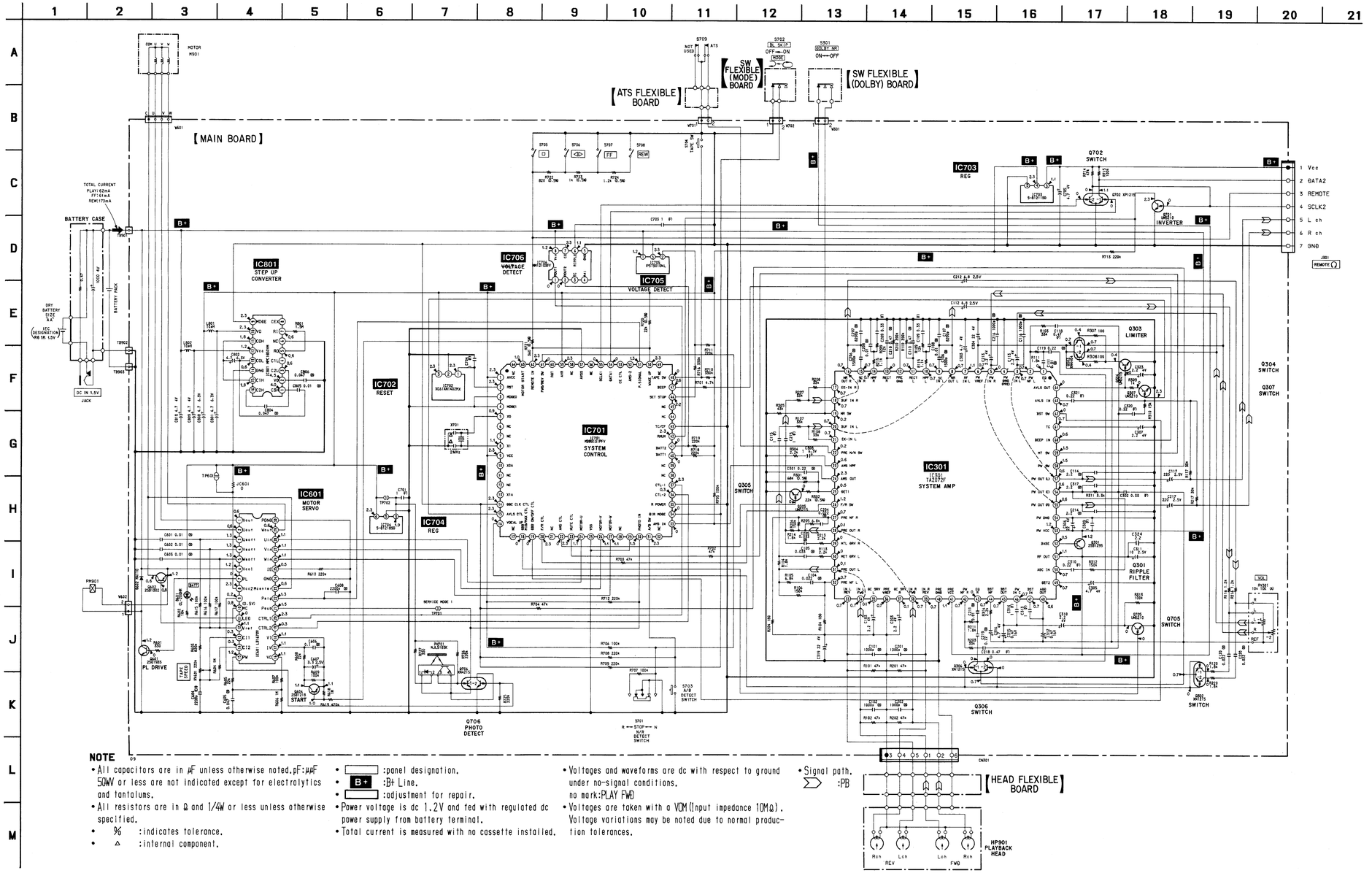


IC801 MPC1850VM



IC301 TA2072F

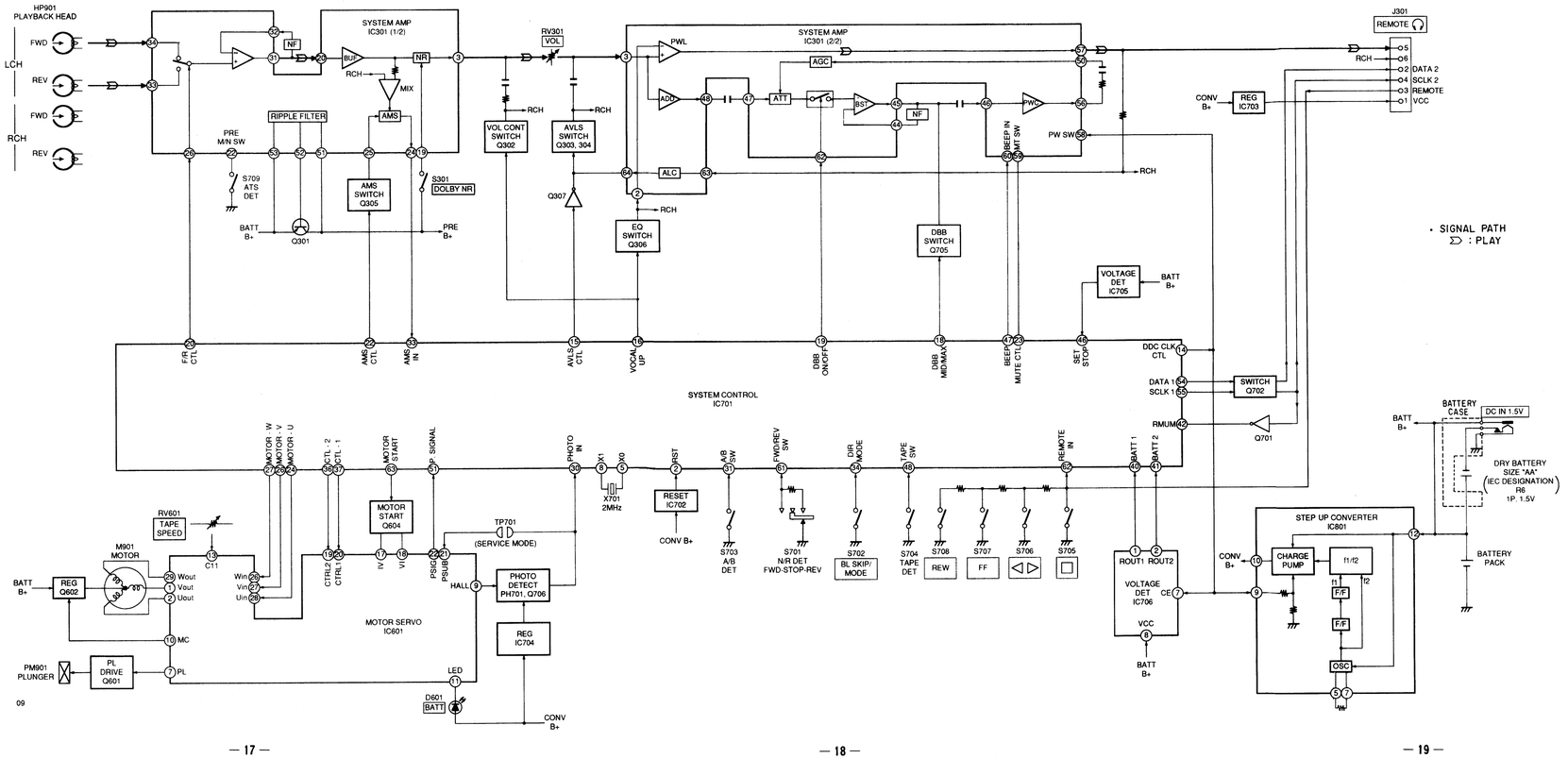




NOTE

- All capacitors are in μF unless otherwise noted. pF: μμF 50WV or less are not indicated except for electrolytics and tantalums.
- All resistors are in Ω and 1/4W or less unless otherwise specified.
- % :indicates tolerance.
- △ :internal component.
- ▭ :panel designation.
- B+ :B+ Line.
- ▭ :adjustment for repair.
- Power voltage is dc 1.2V and fed with regulated dc power supply from battery terminal.
- Total current is measured with no cassette installed.
- Voltages and waveforms are dc with respect to ground under no-signal conditions. no mark:PLAY FWD
- Voltages are taken with a VOM (Input impedance 10MΩ). Voltage variations may be noted due to normal production tolerances.
- Signal path. :PB

6-4. BLOCK DIAGRAM



6-5. IC PIN FUNCTIONS

• IC601 Motor Driver (LB1679V)

Pin No.	Pin Name	I/O	Function
1	VOUT	O	V phase output
2	UOUT	O	U phase output
3	USOFT	I	U phase software switching
4	VSOFT	I	V phase software switching
5	WSOFT	I	W phase software switching
6	VCC1	–	Power supply 1 (0.9V to 1.8V)
7	PL	O	PL driver output
8	VCC2	–	Power supply 2 (VCC1x2=1.8V to 3.6V)
9	HALL	O	HALL element bias output. When 2mA:0.7V IO MAX = 10mA
10	MC	O	External TR drive IO MAX = 20mA
11	LED	O	LED1 driver output IO MAX = 5mA
12	VREF	I	Reference voltage 1.1V
13	CI1	I	Comparator input (Adjust rotation speed according to the external constant of C and R)
14	CI2	I	CI1 charge current in half-wave driving IO MAX = 30μA
15	PW	O	Comparator output
16	VC	O	Buffer output
17	IV	O	VI conversion output
18	VI	O	IV conversion output
19	CTRL2	I	Start, stop, and LED PL switching 3-value input (H, M, L) H:1.7V to VCC2, M:Pin open (0.24V), L:0 mV to 50 mV
20	CTRL1	I	Start, stop, and LED PL switching 3-value input (H, M, L) H:1.7V to VCC2, M:Pin open (0.24V), L:0 mV to 50 mV
21	PSUB	O	MCENTER and U phase output comparator output
22	PSIG	O	PSIG output
23	MCENTER	I	PSIG section motor middle point voltage input
24	GND	–	GND
25	IE	I	Adjusts software switching pin current with external resistor
26	WIN	I	W phase input
27	VIN	I	V phase input
28	UIN	I	U phase input
29	WOUT	O	W phase input
30	PGND	–	POWER block GND

• **IC701 System Controller (MB8913PFV)**

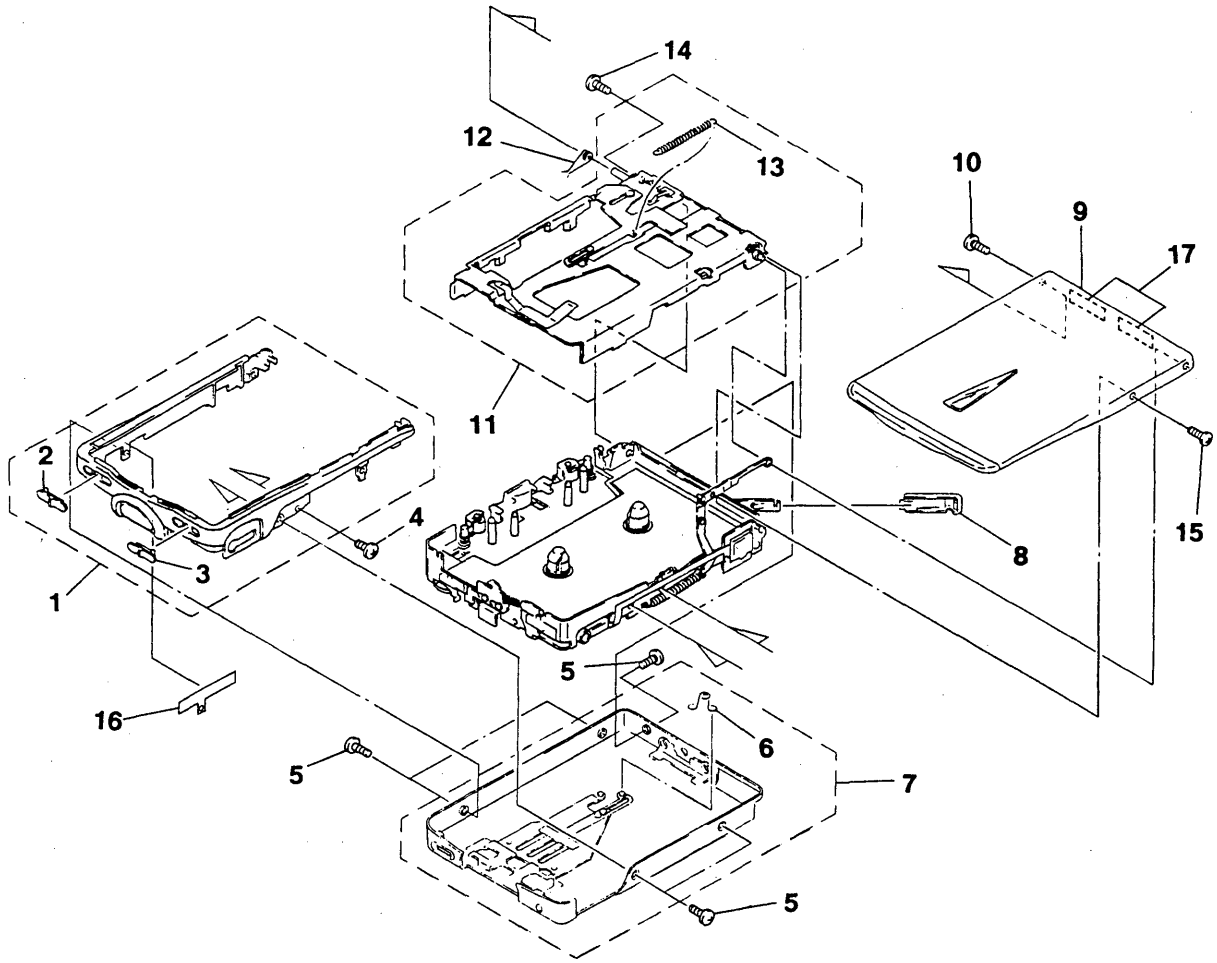
Pin No.	Pin Name	I/O	Function
1	AVCC	–	Analog section power supply
2	RST	I	Reset
3	MODE0	I	Operation mode specified input (Connected to GND)
4	MODE1	I	Operation mode specified input (Connected to GND)
5	X0	–	High speed clock connection (2 MHz ceramics oscillator)
6	NC	–	Not used
7	NC	–	Not used
8	X1	–	High speed clock connection (2 MHz ceramics oscillator)
9	VCC	–	Logic section power supply
10	X0A	–	Low speed clock connection (Not used)
11	NC	–	
12	NC	–	
13	X1A	–	Low speed clock connection (Not used)
14	DDC CTL	O	DDC oscillation frequency change output (L:Waiting state)
15	AVLS CTL	O	AVLS control output (AVLS:L)
16	VOCAL UP	O	Sound quality control output (VOCAL UP:H)
17	NC	–	Not used
18	DBB 1 CTL	O	Sound quality control output (DBB1:H)
19	DBB ON/OFF CTL	O	Sound quality control output (DBB1, DBB2:H)
20	F/R CTL	O	FWD:H, REV:L
21	NC	–	Not used
22	AMS CTL	O	AMS sensitivity control output (FF/REW:H)
23	MUTE CTL	O	AUDIO POWER AMP MUTING (MUTE:L)
24	MOTOR-U	O	Motor U phase control output
25	VSS	–	GND
26	MOTOR-V	O	Motor V phase control output
27	MOTOR-W	O	Motor W phase control output
28	NC	–	Not used
29		–	Not used
30	PHOTO IN	I	Rotation detection input
31	A/B SW	I	Tape A/B side detection SW input (Side A top:L, Side B top:H)
32	NC	–	Not used
33	AMS IN	I	Recording detection input (Music:H)
34	DIR MODE	I	DIRECTION MODE selection and BL, SKIP ON/OFF input SHUT OFF, BL SKIP OFF = L, ENDLESS, BL SKIP ON = H
35		–	Not used (Connected to GND)
36	CTL2	O	Servo IC control output
37	CTL1	O	Servo IC control output
38	NC	–	Not used
39	NC	–	Not used

Pin No.	Pin Name	I/O	Function
40	BATT1	I	LEVEL1 : BATT1 = H, BATT2 = H (LOW) LEVEL2 : BATT1 = H, BATT2 = L (MIDDLE) LEVEL3 : BATT1 = L, BATT2 = L (HIGH)
41	BATT2	I	
42	RMUM	I	Remote control detection (Present:H, Absent:L)
43		–	Not used (Connected to GND)
44	NC	–	Not used
45	NC	–	Not used
46	SET STOP	I	For power failure STOP
47	BEEP	O	Beep sound output
48	TAPE SW	I	Tape presence detection input (Present:L)
49	NC	–	Not used
50	WAKE UP	I	Stop mode release interruption
51	P-SIGNAL	I	Motor rotation control
52		–	Not used
53		–	Not used
54	DATA1	O	Serial data output
55	SCLK1	O	Serial clock output
56	NC	–	Not used
57	AVSS	–	Analog section (GND)
58	NC	–	Not used
59	AVR	–	Analog section reference potential input
60		–	Not used
61	FWD/REV SW	I	F/R SW input (Analog input)
62	REMOTE IN	I	Key input (Analog input)
63	MOTOR START	O	Motor start-up control output (Motor start-up:Outputs L for 200 ms)
64	NC	–	Not used

SECTION 7
EXPLODED VIEWS

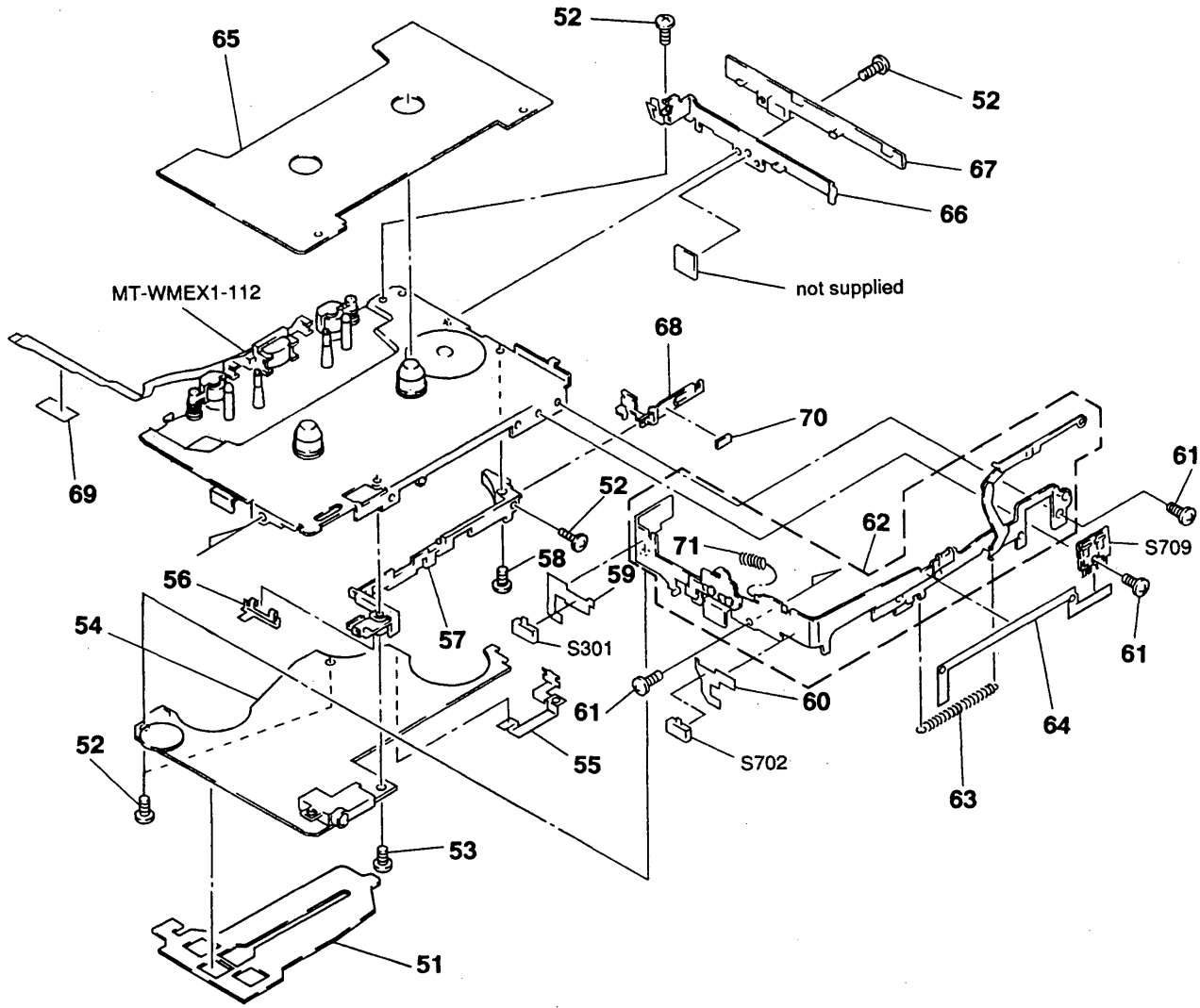
NOTE:
- Items marked " * " are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- -XX, -X mean standardized parts, so they may have some difference from the original one.
- The mechanical parts with no reference number in the exploded views are not supplied.

7-1. ORNAMENT SECTION



Ref. No.	Part No.	Description	Remark
1	X-3368-787-1	ORNAMENT (A) ASSY (K), REEL (EX1)	
1	X-3368-815-1	ORNAMENT (A) ASSY (H), REEL (EX1HG)	
2	3-916-267-01	KNOB (DOLBY) (EX1)	
2	3-916-267-11	KNOB (DOLBY) (EX1HG)	
3	3-916-268-01	KNOB (MODE) (EX1)	
3	3-916-268-11	KNOB (MODE) (EX1HG)	
4	3-704-197-01	SCREW (M1.4X1.6), LOCKING	
5	3-704-197-21	SCREW (M1.4X2.5), LOCKING (EX1HG)	
5	3-704-197-23	SCREW (M1.4X2.5), LOCKING (EX1)	
6	3-916-288-01	SPRING (HOLD)	
7	X-3368-791-1	CASE ASSY (B) (EX1)	
7	X-3369-070-1	CASE ASSY (HG) (EX1HG)	
8	3-916-242-01	LID, BATTERY CASE (EX1)	
8	3-916-242-31	LID, BATTERY CASE (EX1HG)	
9	X-3368-790-1	LID ASSY (B), CASSETTE (EX1)	
9	X-3369-069-1	LID ASSY (HG), CASSETTE (EX1HG)	
10	3-907-009-01	SCREW (M1.4) (EX1HG)	
10	3-907-009-11	SCREW (M1.4) (EX1)	
* 11	X-3368-786-1	HOLDER ASSY	
12	3-916-245-01	SPRING (LOCK LEVER)	
13	3-916-246-01	SPRING, TENSION	
14	3-365-630-02	SCREW (M1.4)	
15	3-704-197-03	SCREW (M1.4X1.6), LOCKING (EX1HG)	
15	3-704-197-01	SCREW (M1.4X1.6), LOCKING (EX1)	
* 16	3-918-043-01	PAPER (H), SHIELD	
17	3-920-724-01	SHEET (RT)	

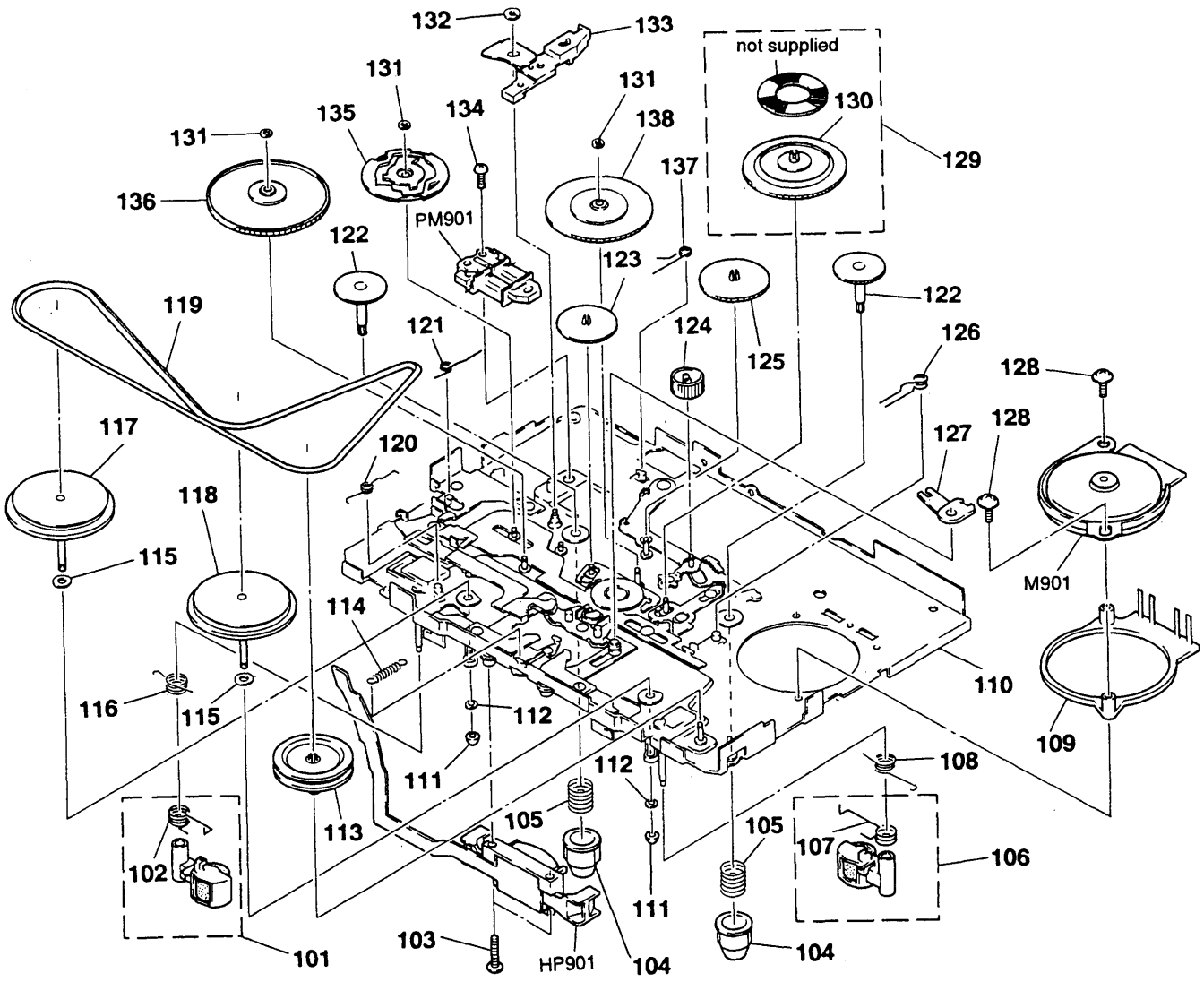
7-2. MAIN BOARDS SECTION



Ref. No.	Part No.	Description	Remark
* 51	3-918-322-03	SPACER (SW)	
52	3-704-197-01	SCREW (M1.4X1.6), LOCKING	
53	3-366-746-61	SCREW (M1.4X5.5)	
54	A-3016-612-A	MAIN BOARD, COMPLETE	
55	3-916-248-01	TERMINAL BOARD	
56	3-912-020-01	TERMINAL BOARD (MINUS), BATTERY	
* 57	3-916-252-01	HOLDER, BATTERY	
58	3-704-197-61	SCREW (M1.4X4.0), LOCKING	
59	1-653-416-11	DOLBY SWITCH FLEXIBLE BOARD	
60	1-653-417-11	MODE SWITCH FLEXIBLE BOARD	
61	3-366-892-01	SCREW (M1.4)	
62	X-3368-788-7	BRACKET (A) ASSY	
63	3-916-241-01	SPRING, TENSION	

Ref. No.	Part No.	Description	Remark
64	1-653-415-11	ATS FLEXIBLE BOARD	
65	3-916-250-01	COVER, MD	
66	X-3368-785-1	BRACKET (B) ASSY	
67	3-916-247-01	ORNAMENT (B), REEL (EX1)	
67	3-916-247-21	ORNAMENT (B), REEL (EX1HG)	
68	X-3368-789-1	TERMINAL BOARD ASSY, BATTERY	
69	3-831-441-XX	SPACER, KNOB	
70	9-911-838-XX	CUSHION	
71	3-365-617-11	SPRING (OPEN), COMPRESSION	
S301	1-572-922-11	SWITCH, SLIDE (DOLBY NR)	
S702	1-572-922-11	SWITCH, SLIDE (BL SKIP)	
S709	1-572-580-11	SWITCH, LEAF (ATS)	

7-3. MECHANISM SECTION (MT-WMEX1-112)



Ref. No.	Part No.	Description	Remark
101	X-3368-776-1	PINCH LEVER (N) ASSY	
102	3-916-341-01	SPRING (PINCH N)	
103	3-704-413-31	SCREW (M1.4X7.2)	
104	3-916-357-01	GEAR (REEL)	
105	3-366-058-01	SPRING, COMPRESSION	
106	X-3368-777-1	PINCH LEVER (R) ASSY	
107	3-916-342-01	SPRING (PINCH R)	
108	3-916-344-01	SPRING (RETURN R)	
* 109	3-916-337-01	DECK, FIXED, TERMINAL	
110	X-3368-781-1	CHASSIS ASSY	
111	3-366-017-01	BUSHING (CAPSTAN)	
112	3-918-943-01	WASHER, STOPPER	
113	3-916-350-01	PULLEY (REVERSE)	
114	3-916-346-01	SPRING, TENSION	
115	3-386-694-01	WASHER	
116	3-916-343-01	SPRING (RETURN N)	
117	X-3368-779-1	WHEEL (N) ASSY, CAPSTAN	
118	X-3368-778-1	WHEEL (R) ASSY, CAPSTAN	
119	3-916-349-01	BELT	
120	3-916-345-01	SPRING (LOCK LEVER)	
121	3-916-340-01	SPRING (EJECT), TORSION	

Ref. No.	Part No.	Description	Remark
122	3-365-801-01	TABLE, REEL	
123	3-916-353-01	GEAR (A)	
124	3-916-352-01	GEAR (FR)	
125	3-916-354-01	GEAR (B)	
126	3-916-347-01	SPRING (NR), TORSION	
127	3-916-339-01	LEVER (NRSW)	
128	3-358-455-11	SCREW, PRECISION WASHER HEAD	
129	A-3042-517-A	GEAR (C)	
130	3-916-355-01	GEAR (C)	
131	3-338-645-31	WASHER (0.8-2.5)	
132	3-348-953-41	WASHER	
133	3-916-338-01	LEVER (TRIGGER)	
134	3-366-521-51	SCREW (M1.4X3.5)	
135	3-916-356-01	GEAR (CAM)	
136	3-916-351-01	GEAR (K)	
137	3-916-348-01	SPRING (TRIGGER), TORSION	
138	X-3368-780-1	CLUTCH ASSY	
M901	1-698-368-11	MOTOR	
HP901	1-500-091-21	HEAD, MAGNETIC (PLAYBACK)	
PM901	1-454-674-11	SOLENOID, PLUNGER	

ATS FLEXIBLE

MAIN

SECTION 8
ELECTRICAL PARTS LIST

NOTE:

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

Les composants identifiés par une marque ⚠ sont critiques pour la sécurité.
Ne les remplacer que par une piéce portant le numéro spécifié.

When indicating parts by reference number, please include the board name.

- Due to standardization, replacements in the parts list may be different from the parts specified in the diagrams or the components used on the set.
- Items marked "*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- -XX, -X mean standardized parts, so they may have some difference from the original one.
- Abbreviation
  CND : Canadian model
  EA : Saudi Arabia model
  JEW : Tourist model

- RESISTORS
  All resistors are in ohms
  METAL: Metal-film resistor
  METAL OXIDE: Metal Oxide-film resistor
  F : nonflammable
- SEMICONDUCTORS
  In each case, u: μ , for example:
  uA...: μA..., uPA...: μPA..., uPB...: μPB..., uPC...: μPC..., uPD...: μPD...
- CAPACITORS
  uF : μF
- COILS
  uH : μH

Ref. No.	Part No.	Description			Remark
	1-653-415-11	ATS FLEXIBLE BOARD			
		**********			
		< SWITCH >			
S709	1-572-580-11	SWITCH, LEAF (ATS)			
**********					
	A-3016-612-A	MAIN BOARD, COMPLETE			
		**********			
		< CAPACITOR >			
C101	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C102	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C103	1-135-187-21	TANTAL. CHIP	2.2uF	20%	4V
C104	1-164-227-11	CERAMIC CHIP	0.022uF	10%	25V
C105	1-164-677-11	CERAMIC CHIP	0.033uF	10%	16V
C106	1-162-965-11	CERAMIC CHIP	0.0015uF	10%	50V
C107	1-164-174-11	CERAMIC CHIP	0.0082uF	10%	25V
C108	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C109	1-165-112-11	CERAMIC CHIP	0.33uF		16V
C110	1-107-823-11	CERAMIC CHIP	0.47uF	10%	16V
C111	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C112	1-109-937-11	TANTAL. CHIP	6.8uF	20%	2.5V
C113	1-135-187-21	TANTAL. CHIP	2.2uF	20%	4V
C114	1-109-994-11	CERAMIC CHIP	2.2uF	20%	10V
C115	1-164-346-11	CERAMIC CHIP	1uF		16V
C116	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C117	1-109-930-11	TANTAL. CHIP	220uF		2.5V
C118	1-164-005-11	CERAMIC CHIP	0.47uF		25V
C119	1-164-489-11	CERAMIC CHIP	0.22uF	10%	16V
C120	1-164-227-11	CERAMIC CHIP	0.022uF	10%	25V
C201	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C202	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C203	1-135-187-21	TANTAL. CHIP	2.2uF	20%	4V
C204	1-164-227-11	CERAMIC CHIP	0.022uF	10%	25V
C205	1-164-677-11	CERAMIC CHIP	0.033uF	10%	16V
C206	1-162-965-11	CERAMIC CHIP	0.0015uF	10%	50V
C207	1-164-174-11	CERAMIC CHIP	0.0082uF	10%	25V
C208	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C209	1-165-112-11	CERAMIC CHIP	0.33uF		16V
C210	1-107-823-11	CERAMIC CHIP	0.47uF	10%	16V
C211	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C212	1-109-937-11	TANTAL. CHIP	6.8uF	20%	2.5V
C213	1-135-187-21	TANTAL. CHIP	2.2uF	20%	4V
C214	1-109-994-11	CERAMIC CHIP	2.2uF	20%	10V
C215	1-164-346-11	CERAMIC CHIP	1uF		16V
C216	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C217	1-109-930-11	TANTAL. CHIP	220uF		2.5V
C218	1-164-005-11	CERAMIC CHIP	0.47uF		25V
C219	1-164-489-11	CERAMIC CHIP	0.22uF	10%	16V
C220	1-164-227-11	CERAMIC CHIP	0.022uF	10%	25V
C301	1-164-489-11	CERAMIC CHIP	0.22uF	10%	16V
C302	1-165-112-11	CERAMIC CHIP	0.33uF		16V
C303	1-135-151-21	TANTALUM CHIP	4.7uF	20%	4V
C304	1-104-847-11	TANTAL. CHIP	22uF	20%	4V
C305	1-109-934-11	TANTAL. CHIP	4.7uF	20%	4V
C306	1-104-847-11	TANTAL. CHIP	22uF	20%	4V
C307	1-135-187-21	TANTAL. CHIP	2.2uF	20%	4V
C308	1-135-337-11	TANTAL. CHIP	1uF	20%	6.3V
C309	1-164-346-11	CERAMIC CHIP	1uF		16V
C310	1-165-128-11	CERAMIC CHIP	0.22uF		16V
C311	1-107-983-11	TANTAL. CHIP	10uF	20%	2.5V
C312	1-109-847-11	TANTAL. CHIP	0.47uF	20%	16V
C313	1-164-346-11	CERAMIC CHIP	1uF		16V
C314	1-164-346-11	CERAMIC CHIP	1uF		16V
C315	1-109-847-11	TANTAL. CHIP	0.47uF	20%	16V
C316	1-135-151-21	TANTALUM CHIP	4.7uF	20%	4V
C317	1-109-994-11	CERAMIC CHIP	2.2uF	20%	10V
C318	1-107-815-11	TANTAL. CHIP	2.2uF	20%	4V
C319	1-104-847-11	TANTAL. CHIP	22uF	20%	4V
C320	1-165-128-11	CERAMIC CHIP	0.22uF		16V
C321	1-165-128-11	CERAMIC CHIP	0.22uF		16V
C323	1-107-815-11	TANTAL. CHIP	2.2uF	20%	4V
C324	1-164-505-11	CERAMIC CHIP	2.2uF		16V
C601	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C602	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C603	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C604	1-164-695-11	CERAMIC CHIP	0.0022uF	5%	50V
C605	1-165-176-11	CERAMIC CHIP	0.047uF	10%	16V
C606	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
C607	1-109-936-11	TANTAL. CHIP	3.3uF	20%	2.5V
C608	1-162-966-11	CERAMIC CHIP	0.0022uF	10%	50V
C701	1-164-346-11	CERAMIC CHIP	1uF		16V

Ref. No.	Part No.	Description			Remark
C703	1-109-996-11	CERAMIC CHIP	1uF		6.3V
C704	1-164-346-11	CERAMIC CHIP	1uF		16V
C705	1-109-934-11	TANTAL. CHIP	4.7uF	20%	4V
C801	1-109-935-11	TANTAL. CHIP	4.7uF	20%	6.3V
C802	1-109-935-11	TANTAL. CHIP	4.7uF	20%	6.3V
C804	1-165-176-11	CERAMIC CHIP	0.047uF	10%	16V
C805	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C806	1-165-176-11	CERAMIC CHIP	0.047uF	10%	16V
C808	1-109-935-11	TANTAL. CHIP	4.7uF	20%	6.3V
C809	1-109-934-11	TANTAL. CHIP	4.7uF	20%	4V
C810	1-109-934-11	TANTAL. CHIP	4.7uF	20%	4V
		< CONNECTOR >			
CN301	1-695-942-21	CONNECTOR, FPC (ZIF) 6P			
		< DIODE >			
D601	8-719-989-53	DIODE	CL-200HR-C (BATT)		
D602	8-719-404-46	DIODE	MA110		
		< IC >			
IC301	8-759-271-27	IC	TA2072F		
IC601	8-759-271-28	IC	LB1679V		
IC701	8-759-296-06	IC	MB89131PFV-G		
IC702	8-759-163-52	IC	XC61AN1402MX		
IC703	8-759-280-84	IC	S-81211SG-QA		
IC704	8-759-516-90	IC	S-81218SG-QR		
IC705	8-759-280-85	IC	PST9010NL		
IC706	8-759-180-33	IC	MM1210-XFF		
IC801	8-759-099-82	IC	MPC1850VM		
		< JACK >			
J301	1-766-512-21	JACK 7P (REMOTE)			
		< JUMPER RESISTOR >			
JC601	1-216-864-11	METAL CHIP	0	5%	1/16W
		< COIL >			
L801	1-412-006-31	INDUCTOR CHIP	10uH		
L802	1-412-006-31	INDUCTOR CHIP	10uH		
		< PHOTO INTERUPTER >			
PH701	8-749-925-05	REFLECTOR NJL5183KA-F20			
		< TRANSISTOR >			
Q301	8-729-807-87	TRANSISTOR	2SB1295-UL6		
Q302	8-729-403-17	TRANSISTOR	XN1215		
Q303	8-729-422-39	TRANSISTOR	XN4404		
Q304	8-729-420-50	TRANSISTOR	UN5215		
Q305	8-729-420-50	TRANSISTOR	UN5215		

Ref. No.	Part No.	Description			Remark
Q306	8-729-403-17	TRANSISTOR	XN1215		
Q307	8-729-421-77	TRANSISTOR	UN5210-R		
Q601	8-729-809-46	TRANSISTOR	2SD1935		
Q602	8-729-822-60	TRANSISTOR	2SB1302-S		
Q604	8-729-420-24	TRANSISTOR	2SB1218A-QRS		
Q701	8-729-421-77	TRANSISTOR	UN5210-R		
Q702	8-729-426-36	TRANSISTOR	XP1215-TXE		
Q705	8-729-421-77	TRANSISTOR	UN5210-R		
Q706	8-729-422-54	TRANSISTOR	XN4215		
		< RESISTOR >			
R101	1-216-841-11	METAL CHIP	47K	5%	1/16W
R102	1-216-841-11	METAL CHIP	47K	5%	1/16W
R103	1-216-839-11	METAL CHIP	33K	5%	1/16W
R104	1-216-812-11	METAL CHIP	180	5%	1/16W
R105	1-216-831-11	METAL CHIP	6.8K	5%	1/16W
R106	1-216-847-11	METAL CHIP	150K	5%	1/16W
R107	1-216-839-11	METAL CHIP	33K	5%	1/16W
R108	1-216-839-11	METAL CHIP	33K	5%	1/16W
R109	1-216-834-11	METAL CHIP	12K	5%	1/16W
R110	1-216-852-11	METAL CHIP	390K	5%	1/16W
R111	1-216-824-11	METAL CHIP	1.8K	5%	1/16W
R113	1-216-825-11	METAL CHIP	2.2K	5%	1/16W
R114	1-216-824-11	METAL CHIP	1.8K	5%	1/16W
R115	1-218-270-11	METAL GLAZE	1.1K	5%	1/16W
R116	1-216-822-11	METAL CHIP	1.2K	5%	1/16W
R117	1-218-294-11	METAL GLAZE	30K	5%	1/16W
R120	1-216-824-11	METAL CHIP	1.8K	5%	1/16W
R201	1-216-841-11	METAL CHIP	47K	5%	1/16W
R202	1-216-841-11	METAL CHIP	47K	5%	1/16W
R203	1-216-839-11	METAL CHIP	33K	5%	1/16W
R204	1-216-812-11	METAL CHIP	180	5%	1/16W
R205	1-216-831-11	METAL CHIP	6.8K	5%	1/16W
R206	1-216-847-11	METAL CHIP	150K	5%	1/16W
R207	1-216-839-11	METAL CHIP	33K	5%	1/16W
R208	1-216-839-11	METAL CHIP	33K	5%	1/16W
R209	1-216-834-11	METAL CHIP	12K	5%	1/16W
R210	1-216-852-11	METAL CHIP	390K	5%	1/16W
R211	1-216-824-11	METAL CHIP	1.8K	5%	1/16W
R213	1-216-825-11	METAL CHIP	2.2K	5%	1/16W
R214	1-216-824-11	METAL CHIP	1.8K	5%	1/16W
R215	1-218-270-11	METAL GLAZE	1.1K	5%	1/16W
R216	1-216-822-11	METAL CHIP	1.2K	5%	1/16W
R217	1-218-294-11	METAL GLAZE	30K	5%	1/16W
R220	1-216-824-11	METAL CHIP	1.8K	5%	1/16W
R301	1-218-736-11	METAL CHIP	68K	0.50%	1/16W
R302	1-218-724-11	METAL CHIP	22K	0.50%	1/16W
R304	1-216-825-11	METAL CHIP	2.2K	5%	1/16W
R305	1-218-295-11	METAL GLAZE	43K	5%	1/16W
R306	1-216-809-11	METAL CHIP	100	5%	1/16W
R307	1-216-809-11	METAL CHIP	100	5%	1/16W

MAIN SW FLEXIBLE

Ref.No.	Part No.	Description				Remark
R309	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R310	1-216-835-11	METAL CHIP	15K	5%	1/16W	
R311	1-216-827-11	METAL CHIP	3.3K	5%	1/16W	
R312	1-216-847-11	METAL CHIP	150K	5%	1/16W	
R313	1-216-845-11	METAL CHIP	100K	5%	1/16W	
R314	1-216-825-11	METAL CHIP	2.2K	5%	1/16W	
R601	1-216-815-11	METAL CHIP	330	5%	1/16W	
R602	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R603	1-216-856-11	METAL CHIP	820K	5%	1/16W	
R604	1-216-857-11	METAL CHIP	1M	5%	1/16W	
R605	1-216-837-11	METAL CHIP	22K	5%	1/16W	
R606	1-216-857-11	METAL CHIP	1M	5%	1/16W	
R607	1-216-845-11	METAL CHIP	100K	5%	1/16W	
R608	1-216-837-11	METAL CHIP	22K	5%	1/16W	
R609	1-216-845-11	METAL CHIP	100K	5%	1/16W	
R610	1-216-849-11	METAL CHIP	220K	5%	1/16W	
R615	1-216-845-11	METAL CHIP	100K	5%	1/16W	
R616	1-216-845-11	METAL CHIP	100K	5%	1/16W	
R617	1-216-845-11	METAL CHIP	100K	5%	1/16W	
R618	1-216-857-11	METAL CHIP	1M	5%	1/16W	
R619	1-216-853-11	METAL CHIP	470K	5%	1/16W	
R701	1-216-829-11	METAL CHIP	4.7K	5%	1/16W	
R702	1-216-841-11	METAL CHIP	47K	5%	1/16W	
R703	1-216-841-11	METAL CHIP	47K	5%	1/16W	
R704	1-216-841-11	METAL CHIP	47K	5%	1/16W	
R705	1-216-845-11	METAL CHIP	100K	5%	1/16W	
R706	1-216-845-11	METAL CHIP	100K	5%	1/16W	
R707	1-216-845-11	METAL CHIP	100K	5%	1/16W	
R708	1-216-849-11	METAL CHIP	220K	5%	1/16W	
R709	1-216-849-11	METAL CHIP	220K	5%	1/16W	
R710	1-216-851-11	METAL CHIP	330K	5%	1/16W	
R711	1-216-849-11	METAL CHIP	220K	5%	1/16W	
R712	1-216-849-11	METAL CHIP	220K	5%	1/16W	
R713	1-216-849-11	METAL CHIP	220K	5%	1/16W	
R714	1-216-841-11	METAL CHIP	47K	5%	1/16W	
R715	1-216-845-11	METAL CHIP	100K	5%	1/16W	
R716	1-216-851-11	METAL CHIP	330K	5%	1/16W	
R718	1-216-849-11	METAL CHIP	220K	5%	1/16W	
R719	1-216-849-11	METAL CHIP	220K	5%	1/16W	
R720	1-218-724-11	METAL CHIP	22K	0.50%	1/16W	
R721	1-218-836-11	METAL CHIP	360	0.50%	1/16W	
R722	1-218-845-11	METAL CHIP	820	0.50%	1/16W	
R723	1-218-692-11	METAL CHIP	1K	0.50%	1/16W	
R724	1-218-694-11	METAL CHIP	1.2K	0.50%	1/16W	
R725	1-216-849-11	METAL CHIP	220K	5%	1/16W	
R726	1-216-849-11	METAL CHIP	220K	5%	1/16W	
R727	1-216-815-11	METAL CHIP	330	5%	1/16W	
R801	1-216-859-11	METAL GLAZE	1.5M	5%	1/16W	

Ref.No.	Part No.	Description	Remark
		< VARIABLE RESISTOR >	
RV301	1-223-711-21	RES, VAR (VOL)	
RV601	1-223-715-21	RES, ADJ 220K	
		< SWITCH >	
S701	1-572-581-11	SWITCH, SLIDE (N/R DETECT)	
S703	1-692-933-41	SWITCH, PUSH (1 KEY) (A/B DETECT)	
S704	1-692-849-21	SWITCH, PUSH (1 KEY) (TAPE)	
S705	1-692-453-11	SWITCH, KEY BOARD (□)	
S706	1-692-453-11	SWITCH, KEY BOARD (◁ ▷)	
S707	1-692-453-11	SWITCH, KEY BOARD (FF)	
S708	1-692-453-11	SWITCH, KEY BOARD (REW)	
		< VIBRATOR >	
X701	1-579-867-21	VIBRATOR, CERAMIC (2MHz)	
**********			
	1-653-416-11	SW FLEXIBLE (DOLBY) BOARD	
		**********	
		< SWITCH >	
S301	1-572-922-11	SWITCH, SLIDE (DOLBY NR)	
**********			
	1-653-417-11	SW FLEXIBLE (MODE) BOARD	
		**********	
		< SWITCH >	
S702	1-572-922-11	SWITCH, SLIDE (BL SKIP)	
**********			
		MISCELLANEOUS	
		**********	
HP901	1-500-091-21	HEAD, MAGNETIC (PLAYBACK)	
M901	1-698-368-11	MOTOR	
PM901	1-454-674-11	SOLENOID, PLUNGER	
S301	1-572-922-11	SWITCH, SLIDE (DOLBY NR)	
S702	1-572-922-11	SWITCH, SLIDE (BL SKIP)	
S709	1-572-580-11	SWITCH, LEAF (ATS)	
**********			
		ACCESSORIES & PACKING MATERIALS	
		**********	
	1-467-782-11	REMOTE CONTROL UNIT	
	1-528-231-22	BATTERY, NICKEL CADMIUM (NC-6WM) (JEW)	
	1-528-445-11	BATTERY CHARGER (BC-8AT) (JEW)	
	1-528-539-11	BATTERY CASE	
	1-528-551-11	BATTERY, NICKEL HYDROGEN (E)	

Ref. No.	Part No.	Description	Remark
	1-528-576-11	BATTERY CHARGER (BC-9HU)	(EX1:US, CND/EX1HG:CND)
	1-528-577-11	BATTERY CHARGER (BC-9HY)	(EX1HG:AEP, EA)
	1-528-578-11	BATTERY CHARGER (BC-9HP)	(EX1HG:UK)
	1-528-580-11	BATTERY CHARGER (BC-7HT)	(E)
	1-528-590-11	BATTERY, NICKEL HYDROGEN	(EX1:US, CND/EX1HG:EXCEPT JEW, E)
	1-569-007-11	ADAPTER, CONVERSION 2P	(E, JEW)
*	3-376-784-11	CUSHION	
	3-759-096-11	MANUAL, INSTRUCTION	(EX1:US, CND/EX1HG:AEP, CND, UK, EA) (ENGLISH, FRENCH, SPANISH)
	3-759-096-41	MANUAL, INSTRUCTION (JEW)	(JAPANESE, ENGLISH)
	3-759-096-51	MANUAL, INSTRUCTION (EX1HG:AEP)	(GERMAN, DUTCH, SWEDISH)
	3-759-096-61	MANUAL, INSTRUCTION (EX1HG:AEP)	(ITALIAN, PORTUGUESE)
	3-759-096-71	MANUAL, INSTRUCTION (E)	(ENGLISH, SPANISH, CHINESE)
*	3-914-571-01	INDIVIDUAL CARTON (EX1)	
	3-916-249-01	CASE, CARRYING	
*	3-918-305-01	INDIVIDUAL CARTON (EX1HG)	
	8-953-537-90	HEADPHONE MDR-E741MP//K SET	
	X-3329-657-1	ATTACHMENT	

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WM-EX1/EX1HG

SONY
SERVICE MANUAL

US Model
WM-EX1

AEP Model
UK Model
WM-EX1HG

Canadian Model
E Model
Tourist Model
WM-EX1/EX1HG

CORRECTION-1

Correct your service manual as shown below.

☛ : **indicates corrected portion.**

Page	INCORRECT			CORRECT	
	No.	Part No.	Description	Part No.	Description
23	7	X-3368-791-1	CASE ASSY (B) (EX1)	X-3368-791-1	CASE ASSY (B) (EX1) (except US, Canadian)
				X-3370-068-1	CASE ASSY (B) (EX1) (US, Canadian)

(ECN-WM401281)

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Personal A&V Products Div.

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